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THE OBJECTIVES IN AGRICULTURAL COST ACCOUNTING*

BY HENRY C. TAYLOR

CHIEF, BUREAU OF AGRICULTURAL ECONOMICS, UNITED STATES DEPARTMENT OF AGRICULTURE

Your president asked me to address this meeting on the relative merits of the survey method and the daily record method of gathering cost materials. I requested that instead of discussing the relative merits of any of the systems of cost gathering, I be permitted to address you on "The Objectives in Agricultural Cost Accounting," and by the term cost accounting I mean the assembling and interpreting of the items of cost and returns in the broadest sense.

I prefer to give only passing attention on this occasion to the methods of assembling cost data desiring rather to give especial attention to the uses to which they may be put in solving important economic problems. If I were to enter upon a discussion of methods, the time would be spent in discussing the relative merits of the different degrees of intensity represented by the detailed cost records on the one hand, where every move of labor and equipment and all transactions are recorded from day to day in complete detail, and by the survey method on the other hand where the investigator visits the farm once and records the principal activities and transactions of the year. Attention would need to be given also to enterprise studies by the route method where specific limited information is collected from day to day or from month to month. If we had time to complete such a discussion we

*Read at the meeting of the American Farm Economic Association, at Chicago, Illinois, December 28, 1922

would probably conclude that, for a complete analysis of what happens on the farm the complete record is very important, for securing enterprise costs the intermediate method is satisfactory and for securing a general picture of the relative results obtained by a large number of farmers operating by more or less different methods, the survey is exceedingly valuable. One of the important differences between the intensive and the extensive systems of securing cost data is that the intensive method is the more expensive and places greater limitation on the extent and timeliness of the investigation. Another important phase of the two methods is the extent to which estimates are used in each and the degree of accuracy in these estimates. It must be borne in mind, however, that any system of accounting includes large numbers of estimates and that the degree of accuracy needed will depend on the nature of the problem to be solved.

When we turn from methods of collection to methods of analyzing and interpreting cost data, a whole series of difficult problems arises which, in some measure, limit the value of data secured by any method, One of the most difficult of these problems centers about the question of joint costs, i. e., costs shared by two or more lines of production. These costs are very numerous in all types of farming, though less complicated in areas of specialized production than in the mixed farming of the corn belt. In addition to the problems of allocation of joint costs, there are such questions as the rates of charge of home-grown feeds used by livestock, and the rates for the labor and power used on the different undertakings.

Consideration of all the problems involved in the collection and analysis of cost data would lead to the conclusion that each of the methods has merit and that the method to be used for a particular problem should be selected according to the purposes in view. The first step, therefore, in clarifying the problems of agricultural accounting is a statement of the objectives for which we are striving.

Probably the most important purpose of agricultural accounting is to furnish the basis of making a choice between two or more lines of production. One of the first choices a farmer has to make is the choice of crops. Shall the southern farmer put this field into cotton or corn? Shall the northern farmer put that field into oats or barley? Shall he produce

clover or alfalfa for hay? These are decisions the farmer must make. With or without cost data a decision will be made and action proceed from year to year, but accurate cost data properly interpreted should greatly increase the accuracy of the judgment of the farmer. Keeping choice of crops in mind as an objective, what kind of cost data is required?

Relative profitableness, or relative return to the farmer, decides the choice of crops. If profits are to be measured in terms of the returns to the factors of production it becomes obvious that to be of most value for the purpose of making selection, this measure should be made in terms of returns per unit of that factor of production which makes the principal demand for managerial activity. It may so happen that for certain crops with similar labor demands the return to land provides the simplest basis of comparison, whereas between other competing crops it may better be measured in terms of man hours. When comparing two crops that demand widely different amounts of labor, as tobacco and corn, where tobacco made a $48.50 return per acre, compared with a return of $18.50 an acre for corn, but where corn gave a return of 75 cents per man hour, and tobacco only 41 cents per man hour, as shown in Table 1, the measure of relative profitableness might better be made upon the basis of return to man labor rather than return per acre, for a man can operate several times as many acres of corn as of tobacco because of the larger labor requirement per acre of the tobacco.

The problem presents a different aspect in making choice between non-competing crops. When we have before us information which shows that corn on a particular farm, after paying all other expenses, returned 75 cents an hour for the human labor put upon it, whereas oats returned only 27 cents an hour for its labor; are we to conclude that the oats should be discontinued and the land put into corn? It is only when we know the relation of oats and corn to each other in the system of farming that we can answer this question. If we should find that the larger the corn crop and the smaller the oat crop the greater the total farm profits, it would be a simple matter to conclude that the acreage of oats should be reduced or the crop possibly omitted entirely from the rotation. But if we find that the oat crop can be grown and harvested without

interfering with labor-and-machinery demands made by the corn crop nor in any other manner decreasing the size of the corn crop which can be handled, and if it becomes evident that the corn crop is benefited by a system of rotation in which the oat crop, or some similar crop, is an important factor, we may decide that oats should be retained on the farm. This becomes clear when one bears in mind that the farmer tries to make up a labor program in which he will be doing at each season of the year the thing which adds most to his total net profits. An enterprise which makes demands upon labor and equipment at one season of the year may yield a very high profit, while one which requires attention at another time of year may yield but small returns, and yet add more to the total net profit of the farm than would any enterprise which could be taken on in its place.

Table I.—Returns per acre and per hour of man labor from oats, corn and tobacco, Wisconsin farm, 1916.

	Return per acre	Return per hour of man labor
Oats	$6.90	$ .27
Corn	18.50	.75
Tobacco	48.50	.41

In other words, the farmer needs to have other data besides the total costs and returns for the various products before he can make the proper selection of enterprises. Nature, for instance, determines to a large extent what can or can not be done on the farm at any given time of year and this fact tends to bring about considerable variation in the demand for labor at different seasons of the year. As they are now conducted, none of the common live stock or crop enterprises supply a uniform demand for labor even though they may be the chief source of income on the farm. The result is that it is usually found to be profitable in most sections to add to the organization enterprises that will furnish employment during the slack periods. These supplementary enterprises are used to salvage time that would otherwise be wasted and from the standpoint of farm organization alone must be considered profitable even though they may not give as large a return as the chief lines of production. In practical accounting it has not been the

practice to reflect this supplementary and competitive relationship of enterprises in the costs, and for this reason the cost figures secured are sometimes too high and sometimes too low when compared with the figure which is demanded by farmers in deciding whether or not to grow a given crop. For a complete analysis of the problem other data than those usually included in costs and returns are necessary as, for instance, the seasonal distribution of the labor demand, soil character, relation of permanent pasture to crop land, etc., and the collection of these physical facts becomes therefore an essential part of farm cost accounting.

Turning our attention to the question of labor distribution, let us compare corn and oats. Table I shows the labor demand of these two crops for a southern Wisconsin dairy farm on which corn was one of the most important crops. The accounts for this year showed that corn returned $18.50 per acre as against $6.90 per acre for oats, and were we to rest our judgment entirely on the per acre returns as shown by the accounts, we would be forced to the decision that oats ought to be discontinued, but a glance at the chart tells us that the oat crop at no time interfered with corn production in its labor demand. The work on oats was performed in early spring and midsummer when corn does not demand the farmer's attention. The only question is whether some other crop which is likewise supplementary to corn will pay better than the oats.

When the demands for labor and for equipment are made by competing crops, the problem does not present so many complications. Here the question can be handled by ascertaining the difference in the returns and differences in the items of costs which are not common to both. To the extent that the costs are common they can be cancelled in determining the relative profitableness of competing crops, and if so, why need they be given further consideration when choice of crops is the objective? This may sound like heresy, but note that I am speaking now only with regard to this particular use of cost accounts, namely, the making of choice between competing enterprises where some of the factors of production are common to both.

Let us consider conditions as they actually existed upon a Minnesota farm in the cropping season of 1921 and let us

assume that we have the choice which this farmer had in the spring, that is, the choice of seeding a 30-acre field to barley or to oats. The farmer has found by the use of cost records and personal observation that there are many operators and costs which are common to both crops.

The same land will be used whether seeded to oats or barley. While there is some choice as to methods to be used in preparing the ground for the seed bed let us say that this farmer decides to disc for either crop, then, as shown in Table II, the labor and machinery required in discing, harrowing, and seeding will be identical for either crop. So as nearly as can be foretold, the operation of cutting the crops will be the same in the demands for man labor, horse labor, and equipment, and the time required to shock the crops will be practically the same. The general item of overhead and miscellaneous costs will be identical for 30 acres of either crop.

The items of seed, twine, and threshing will not cancel as the others have done. The sum of these three items will amount to about $25 more if the 30 acres are seeded to oats than if seeded to barley.

Turning to the products that will come from either line of production, the straw from either will in this case be of equal value on the farm. The farmer knowing this field and what it has normally produced believes he can reasonably expect a yield of 45 bushels of oats or 25 bushels of barley, and to the best of his ability he estimates that the price at the machine in the fall will approximate 40 cents for oats and 60 cents for barley. With these estimates in mind, the farmer will conclude that the 30 acres of oats will return about $65 more than 30 acres of barley.

Table II.—Method of Selection Between Competing Crops

	Oats	Barley	Amounts not Canceled
Land charges—			
Acres	30	30	None
Discing—			
Man hours	30	30	None
Horse hours	90	90	None
Harrowing—			
Man hours	19	19	None
Horse hours	62	62	None
Seeding—			
Man hours	20	20	None
Horse hours	60	60	None

	Oats	Barley	Amounts not Canceled
Seed—			
Bushels	80@$ .47	55@$ .60	$4.60
Cutting—			
Man hours	22	22	None
Horse hours	68	68	None
Twine—			
Pounds	104@$ .14	70@$ .14	$4.76
Shocking—			
Man hours	40	40	None
Thrashing—			
Man hours	176	144	
Horse hours	238—$59.00	196—$48.40	$10.60
Thrashing—			
Cash cost	$49.84	$44.58	$5.26
Overhead and miscellaneous costs	$7.40	$7.40	None
Total additional cost of oats over barley			$25.22
Value of product—			
Grain	1,350 bu., $540.00	750 bu., $450.00	$90.00
Roughage	30 tons, $150.00	30 tons, $150.00	None
Difference in favor of oats			$64.78

In the study of crop selection the objective of the accountant is the securing of basic information, such as the number of men and horses required and the amount of equipment needed for a given acreage which will give the basis for calculating the relative profitableness of different enterprises from time to time as changes in the prices paid for the instruments of production and for the products of production suggest the desirability of such action. It is obvious, therefore, that if our cost data are to be of direct use in this connection, they must be assembled as standards typical of different farms and different conditions, rather than simply as averages from numbers of farms operated in different areas.

The crops having been chosen, another purpose of agricultural accounting is to furnish a basis for making choice between two or more methods of carrying out a given line of production. For example, having decided what crops to produce, the farmer's next problem is that of the degree of intensity with which these crops should be cultivated. The corn-grower must decide whether to undertake the production of 50 acres of corn per man and team, or to limit the area to 40 or to 30 acres, with the expectation that the larger yield per acre to be secured by the more intensive culture will increase the total profits from the crop. Or the problem of the cotton farmer may be

that of deciding the most profitable rate of application of fertilizer. The question is not the rate of application which will give the largest yield, but the application which will return the greatest net profit. A recent cost study of cotton farms in Alabama shows, as indicated in Table III, that an increase in the rate of fertilizer application was accompanied by an increase in the yield per acre.

Table III.—Increasing profits per acre from increasing use of fertilizer

Fertilizer	Application	Av. application of fertilizer	Land value per acre	Yield per acre of lint	Man hours per acre	Mule hours per acre	Profit per acre
Group 1	250 lbs. and under	208 lbs.	$83	216 lbs.	105	48	$14
Group 2	400 to 251 lbs.	331 lbs.	82	268 lbs.	128	60	20
Group 3	Over 400 lbs.	572 lbs.	77	306 lbs.	133	57	25

NOTE: Rates—Man labor, 14 cents per hour; mule labor, 10 cents per hour; fertilizer, $30 per ton; seed, 50 cents per bushel; ginning, $4. per bale; use of land, 7% of value and all other costs, $7.75 per acre. Price of lint, 22 cents per pound; seed, $25 per ton.

A balancing of receipts and expenses in the production of cotton for each group shows that: Group 1 with a low application made a profit of $14 per acre, while Group 2 with a medium application made a profit of $20 per acre, and Group 3 with a high application of fertilizer made a profit of $25 per acre.

It is evident that under existing conditions the liberal use of fertilizer returned a considerably greater profit per acre than did the use of a medium or low application. Whether or not this larger profit per acre will be attractive to the farmer depends upon whether or not he will be obliged to reduce his acreage of cotton in order to secure labor to pick the larger yield per acre.

To the accountant this represents a relatively simple problem because aside from cost of fertilizer and the cost of picking and ginning, the elements of cost are the same.

In the case of the different degrees of intensity of cultivating corn, I have not been able to turn my hand to available data. But were an experiment conducted in which a man,

team and equipment were used continuously on the 30 acres, the 40 acres, or the 50 acres, the only variables which the accountant would need to watch would be rent, seed cost, and the value of the product, in order to determine the relative profitableness of these various degrees of intensity.

Neither of these examples illustrates the entire problem the farmer faces when deciding the acreage to be planted and the intensity with which it is to be cultivated. The accountant must recognize that the proportions in which labor and capital must be applied to the land to secure the greatest profit necessarily vary with changes in the relative costs of the factors of production and the price of the product. With the full problem in view he should assemble such facts with regard to rent, wages, equipment, and material as will enable the farmer to draw the right conclusions on the subject at any and all times.

In the choice of equipment many important questions are being raised. In the last decade the introduction of the tractor has set the farmer thinking in terms of the relative desirability of performing different farm operations with a tractor, with horses, or with both. He has found that he needs to give attention not only to relative costs but to relative returns if he is to decide intelligently. Here is a case where the elements of cost are so entirely different that it seems necessary to get rather full information.

For instance, suppose that an Illinois farmer with 200 acres of crops is desirous of knowing whether or not to buy a tractor. The annual cost of using a two-plow tractor and of keeping a horse, on such a farm would be approximately as shown in Table IV.

Table IV.—Cost of Using a Tractor

Annual depreciation	$80
Fuel	75
Repairs	30
Interest	20
Oil	15
Other costs	10
Total	$230

Cost of keeping a horse

Feed	$65
Depreciation	10
Interest	7
Stabling	7
Harness costs	2
Shoeing	2
Other costs	2
Total	$95

The introduction of the tractor would allow for a reduction of at least two head of workstock and a corresponding reduction of $190 in the yearly horse expense, leaving a net increase of $40 in the yearly cost of power.

Against this $40 increase there are items which are not always easy to evaluate but which must be considered before a proper conclusion can be drawn. Materials collected thus far are particularly lacking in information which will give us a measure of value to apply to those intangible items.

The tractor may make possible a reduction in expense for hired help, and if so, proper credit should accrue to the machine.

A tractor is satisfactory for a large amount of belt work and may save the cost of purchasing a stationary engine.

If custom work is done with the tractor, the revenue therefrom should be properly credited.

An increased crop yield may result from work done at the proper time or from work of a better quality, while on the other hand, the use of the tractor on soils which pack easily may reduce yields.

What value are we to attach to these and all the other benefits and drawbacks connected with these two forms of power?

Cost accounting can assist materially in giving the final answer to the problem. As cost studies continue in the field of farm power careful measure must be made of the limitations of both the tractor and the horse, of the timeliness and quality of work performed by each and of other elements connected with farm power which are reflected in the farm income. These are factors which must be given due consideration in an interpretation of farm power figures. So long as these factors are not evaluated and entered into the account, it is necessary for the farmer to make estimates of their sig-

nificance before drawing conclusions from the accountant's figure.

Having decided upon the crops to grow, the equipment to use, and the degree of intensity of culture, the problem of the most profitable method of disposing of these crops must next be solved. While some of the crops are definitely produced as feed crops and others as cash crops, there are many which may be fed or sold at the discretion of the farmer.

The answer to the question, "Shall I feed or sell my corn?" can not be made simply on the basis of the difference in the amount of cash received. A particular farming system is often contingent upon the amount of family labor at hand and the quantity of accessible capital. With the knowledge that local conditions are favorable to the production of certain crops the question arises as to whether the farming system shall include live stock enterprises. If live stock are included in the farming system, the question of available capital, the supply of labor, as well as costs and receipts, must be carefully analyzed as a basis for rational decision. In fact, the study of the whole question of crop and live stock selection cannot begin and end with a consideration alone of expenses and income for the year from each line of production, but careful consideration must be given to the character of the expenses, and to the supply as well as the varying demands made by farm enterprises upon the different factors of production at each season in the year.

When the farmer comes to marketing his produce, he may have several choices. He may sell to a local independent buyer, ship directly to the central market on his own account, or enter a cooperative association organized for the purpose of marketing the commodity which he has for sale. Here costs as well as gross receipts must be taken into account because here, as in other cases, the net receipt is of primary consequence to the farmer. The operations involved in the marketing of grain or live stock at central markets are very much the same, whether the farmer chooses to market his product as an individual through a commission merchant, or whether he joins with his neighbors in a local cooperative association.

But when the local cooperative association is a member of a federation which undertakes the functions of the middleman

at the terminal market it is a matter of considerable consequence to the farmer-member of the local association and to the public at large, to know whether or not these functions are performed more cheaply and as well, or better, by associated effort. These federations or cooperative selling agencies usually exact the same rates of commission as competitive organizations, but give a refund or a patronage divided at the end of the year, dividing their profits upon a prorata basis, according to the volume of business transacted through them by the constituent members.

The terminal charges, commission, yardage, feed, etc., which were assessed against the hog shipments of six associations in Nebraska by a cooperative selling agency, together with the refund or dividend are shown in Table V.

Table V

Total shipment of hogs—pounds	2,929,330
Terminal charges at usual rates	$4,598.30
Rate per thousand pounds	1.57
Refunds on the above shipments by the Cooperative Commission Company	1,345.90
Rate per thousand pounds	.46

It may be noted from the example that while the refund secured through the cooperative agency amounts to nearly 30 per cent of the total terminal charges, it amounts to less than 5 cents per hundredweight on the total stock marketed, and should the price secured by the cooperative organization average 5 cents less per hundredweight than might have been secured by a competitive agency, this apparent saving would be wiped out entirely.

In considering the merits of cooperative selling agencies, the quality of their services and the quality of services rendered by competitive agencies must be determined. The accountant's problem is to collect and analyze the records of a large number of cooperative associations and independent operators, with a view to determining the most efficient methods of marketing, when both the quality of the service and its cost are taken into consideration.

While the primary purpose of cost accounting is the assembling of facts and analyzing them with a view to giving the manager a more intelligent basis for passing judgment wher-

ever a choice is open between two lines of action, cost accounting data have other important uses.

They give the basis for making comparisons between the returns secured in the different lines of agricultural production in the various parts of the United States. Such information is important to the educational forces which have for their purposes giving general direction to trends in agricultural development. This same material also gives the basis for making comparisons between returns in agriculture and other industries. For these purposes the results of our accounting must be generalized and supplemented so as to show costs and profits in the various lines of production and the trends of costs and profits from year to year.

Furthermore, just to the extent that it is thought desirable for the government to influence prices by tariff legislation or other means, cost accounting data form a considerable part of the basis for intelligent action. The authority now vested in the President and the Tariff Commission makes necessary the giving of much attention to gathering and analyzing agricultural costs. It is true also that farmers who associate themselves together for the purpose of collective bargaining are likely to go very badly wrong if they are not guided by such facts as proper cost accounting will provide. Not only is there danger that they may temporarily and in specific cases unduly enhance prices, which will bring them under the action of the Capper-Volstead Act, but they may also over-stimulate production and in the long run depress prices below the proper point in spite of any power of collective bargaining the association may have.

It has long been held by economists that where there is no interference with the action of competitive forces, prices tend to approximate marginal costs. If this general truth is kept in mind in our definition and interpretation of the elements of cost and cost rates, we may be able to use our results in determining whether the price is being unduly enhanced by concerted action. But accounting figures may be misleading and of little value for this purpose. Unless particular attention is given to the proper determination of charges for the use of land, unpaid labor and other non-cash items, and to the costs

incurred by new producers who have entered the field on account of rising prices.

The acreage of most farm crops and number of live stock can be expanded or contracted more or less at will and most of these can be expanded rapidly if the price becomes sufficiently attractive. As crop area is expanded to take in those acres which normally would not be put into the crop and as the intensity of culture changes in an endeavor to increase the volume of production, a price which will meet the costs of the marginal group will constantly require revision upwards.

I have attempted to enumerate some of the major objectives in agricultural cost accounting and to point out the wide range of usefulness of cost data. Such data can be made to throw much light on most of the problems with which the agricultural economist has to deal. It is evident that no one method of assembling and analyzing cost data will suffice for the many and varied purposes for which they are to be used. The accounting procedure must depend upon the objective—the question to which we are seeking an answer. And if the results are to be of assistance in answering the questions which will confront us in the future, they must be expressed in terms which admit of modification from time to time to conform to changes in cost rates and prices of products.

The Editor of the Journal of Farm Economics has a number of copies of the International Yearbook of Agricultural Statistics, 1909-1921, for sale. These may be obtained by sending check or money order for $2.00 plus 10 cents postage to Miss O. M. Ford, Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

THE PROBLEM OF INTEREST AND RENT IN COST DETERMINATION[1]

By W. E. GRIMES

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Interest and rent as elements included in cost statements have been the subject of much controversy. When included as costs, interest and rent usually appear as one sum, designated as interest on investment. The controversy over including interest and rent in cost has hinged around the question of whether or not they are income or expense. It is suggested that much of the controversy is the result of difference in viewpoint and in the purposes for which cost data are needed.

From the social viewpoint, interest on capital and rent of land are income. This viewpoint is much broader than that of the individual entrepreneur and when cost data are viewed in this light it is very questionable if rent and interest can be truthfully called costs. However, the rate of return earned on capital and the amount of the rent of land used in the production of any commodity are of interest to the consumer of that commodity, since the price paid not only includes cost items exclusive of interest and rent, but also the income to all factors used in its production. If the portion of the price of a commodity which is imputable to each of the factors contributing to its production is to be determined, the total income to those factors must be allocated in some such manner as is used in determining their amount in cost data. This assumes, of course, that these shares of the income going to land and capital are non-contractual in character.

From the viewpoint of the individual entrepreneur, interest and rent may or may not be considered as costs. The entrepreneur who supplies the capital and land used in his business, receives interest and rent which are income to him, but if he must borrow the capital and rent the land, the interest and rent paid are expenses which he must meet out of the returns from the product produced. If the pro-

[1]Read before American Farm Economic Association Chicago, December 28, 1922

ducer is in the latter position it is very clear that, to him, interest and rent are costs. The difference in viewpoint due to differing positions, with reference to the factors contributing to the production of a product, suggests that it is desirable to have cost statements expressed in both ways; that is, with and without rent and interest.

Accounting practices were first developed to their present degree of perfection in connection with non-agricultural industries. These industries frequently have had a corporate form of organization. The accounting procedures followed have been adapted to the needs of businesses of this character. Under the corporate form of organization all sharers in the income have definite contractual relations to that income with the exception of the holders of common stock. These stockholders assume the risks involved in the operation of the business and supply a portion of the capital required for its operation. Income to the stockholder is usually expressed in terms of dividends and investors have looked upon the desirability of the stock of various corporations from the standpoint of the size of the dividends earned. This has been the most frequent measure of the efficiency of business concerns.

Farm accounting developed more tardily than accounting for non-agricultural industries. The investigators dealing with farm costs have almost universally included interest on capital and rent of land as a part of the cost of producing farm products. It is quite probable that this difference in accounting practice is due to the difference in organization of farms as compared with the organization of non-agricultural businesses. In the case of a farm business the operator usually furnishes part or all of the land, labor, and capital used, and all of the managerial ability. The income to these factors in production is not allocated through any contractual relations so far as the return to that portion furnished by the farm operator is concerned. If the amount of the income imputable to each of these factors is to be determined, conditions outside of the farm must be considered. It is a problem in the allocating of the total income to the factors responsible for it.

In solving such a problem one of the productive factors must be looked upon as the residual claimant and the

amount of the shares to the other factors determined in some way. In cost statements for farm products the managerial ability of the farmer has most frequently been looked upon as the residual claimant. These statements usually have included interest on capital, rent of land, and wages for the labor of the operator as a part of the costs. On most farms the factor limiting the success of the business is the ability of the operator. Land, capital, and labor are usually available to him in the amounts in which he proves capable of managing them. Consequently the success or failure of the farm business is a direct reflection of the ability of its operator and in this position of responsibility the operator becomes the logical residual claimant. Comparisons of farm cost statements which include the shares of the other factors in production indicate, other things being equal, the relative managerial ability of the operators.

Current market rates of return are usually used to determine the amount of the income to be attributed to each of the factors other than management. Costs determined in this way represent what the total cost would be if the capital were borrowed, the land rented, and the labor hired, but all used in production under the direction of the farm operator who exercises managerial ability and assumes all risks. The difference between the total cost shown in a statement of this kind, and the value of the product, represents that portion of the income which can be attributed directly to the managerial ability of the operator and should be regarded as compensation for the risks assumed by him.

Most cost analyses have been from the viewpoint of the individual farmer or that of farm organization. From this viewpoint it is essential that rent and interest be included in the cost statements if they are to present data which will be comparable with similar data secured under other conditions. For example, if it is desired to compare the efficiency of two farmers, "A" and "B," each of whom is producing one thousand bushels of wheat on identical areas of land which are equally desirable in all respects, but Farmer "A" is using five hundred hours of his own time and capital goods valued at four thousand dollars while Farmer "B" is using seven hundred hours of his own time and capital

goods valued at three thousand dollars, the conditions of production must be converted into terms of some common measure. It is impossible to compare the efficiency of these two farmers directly and accurately when they are using different amounts of the various factors of production unless these factors of production are expressed in some common term. The method most frequently followed has been to include in the costs the value of the use of the various factors at current market rates. This makes it possible to compare the relative efficiency of these producers. With such information it is possible to ascertain whether the methods followed by Farmer "A" are more or less efficient than those followed by Farmer "B."

The relative desirability of methods, as viewed by the farmer, is dependent upon the relative values of the factors of production. This assumes mobility of the factors of production and it is believed that most farmers can vary the relative amounts of land, labor and capital combined in the business if they desire to do so, and thereby demonstrate their ability to manage the business. A rise in the market rate of labor without any change in capital costs will induce farmers to use relatively more capital and less labor. Similarly a decrease in labor costs with no change in capital costs will result in the use of more labor and less capital. The factors of production must be valued in cost statements used for such purposes or there will be no satisfactory basis for comparison.

In this way enterprises included within the same farm business may be compared even though they provide employment for the factors of production in widely varying proportions. This permits the farmer to choose between methods which involve the use of little capital, and those which involve the use of larger amounts of capital. He can decide whether to utilize more land on an extensive scale or to use more intensive methods on a smaller area. Without comparisons of this kind it is impossible to judge of the relative desirability of farming methods, enterprises, and practices.

The problem in farm organization then, is not a question of whether or not interest and rent should be included but is a question of the rates of return to be used in making

computations. The question of the rate used is of the utmost importance if judgments based on the results secured are to be relied upon. If the rate is too high more of the income will be attributed to the factor concerned than it would receive were it placed on the market under competitive conditions.

There are two viewpoints from which the rate to be used may be considered. If the operator of the farm is looked upon as a borrower of capital or a renter of land the cost to him will be the price which he must pay to secure the use of capital goods, and of land. On the other hand if the farm operator is considered as one who is furnishing capital goods and land to be used in production, then the income attributable to these factors may be considered as a net return which could be secured were they to be furnished to others for these purposes. It is believed that more farmers fall within the latter than in the former class. Most farmers have more of their own than borrowed funds invested in their farm businesses. They also furnish more of the land than they rent from others. For this reason it is believed that a rate of return equivalent to the net return on similar capital goods and land placed on the market, more nearly represents the condition confronting the usual farmer.

It has been clearly shown that landlords cannot expect a net return of more than three or four per cent on funds invested in farm land throughout the Middle West. This net return which comes to them as the rent of their land is probably not materially different from the net return which they would receive if they invested their funds in farm mortgages bearing an interest rate of five to five and one-half per cent. The difference between the net return and the gross interest rate is accounted for by the expense of placing loans, of making collections, and assuming risks. It is believed that the use of net return is more satisfactory than the use of the gross return in such cases.

The usual accounting practices followed by investigators working with farm costs, have resulted in some of the interest and rent being diffused throughout the entire cost statement. This is particularly true where interest is charged

on equipment such as machinery and work horses and then the use of machinery and the cost of horse labor is distributed to the various enterprises at a rate which includes interest on investment. It is believed that a method which would keep the items of interest and rent distinct from other items and prevent this diffsion would be preferable to the methods now used if results only are considered. The practical difficulty which has prevented the adoption of such methods is the lack of accounting practices which will permit this without greatly increasing the work of recording and analyzing the data on which the cost statement is based. However, the writer believes that this problem is one which investigators working with farm costs can well afford to consider carefully and thoughtfully. The presentation of cost data which includes interest and rent, cannot be very seriously criticized if the items of interest and rent are shown separately from the other items making up the complete statement. Anyone wishing to use such figures for purposes in which it is desirable to omit interest and rent, can do so by merely omitting these items from the total.

From the social viewpoint cost data are of interest in determining the price at which any group of producers will cease to produce a commodity. Viewed from this angle the problem of interest and rent, as a part of cost, involves the question of the return on capital and land which is essential to insure that the owners of capital and of land will continue to perform their functions as capitalists and as land-owners in supplying the needed quantities of these factors of production. This phase of the question is beyond the scope of the present paper and will only be mentioned in this connection.

In conclusion it may be stated that rent of land and interest on capital goods must be included in cost statements which are to be used for comparative purposes. Such statements are of value in the selection of farming enterprises, in the determination of farming practices, and in adopting methods which will give more efficient production and a greater return to the operator. This necessitates the allocation of income and in doing this it is very important that the rates of return computed on the various factors of production conform as nearly as possible to the current market

rates for those factors. It is also necessary to determine which one of the factors in production shall be looked upon as the residual claimant. The operator is responsible for the success or failure of the business. He is the motivating force. In the vast majority of cases it can probably be said that the managerial ability of the operator is the limiting factor in determining the success of the business. For these reasons it is believed best to consider the residuum remaining after the shares of the other factors have been deducted at current market rates of return for them at the operator's return for management and assumption of risk. In using current market returns the net rate of return is preferable to the gross rate since most farmers are sellers and users rather than purchasers of the factors of production. Farm cost data as presented should preferably include interest and rent but these items should be separate and distinct from other items of cost. When presented in this manner such statements make possible utilization of these data for any purpose for which they may be desired.

Professor J. I. Falconer, Secretary-Treasurer of the American Farm Economic Association, expects to leave the latter part of this month to remain six months in England studying the English land problem since 1900. Mr. F. L. Morison, of the Ohio State Agricultural College, Columbus, Ohio, will act as Secretary-Treasurer during Professor Falconer's absence.

FALLACIES OF A PLAN TO FIX PRICES OF FARM PRODUCTS BY GOVERNMENT CONTROL OF THE EXPORTABLE SURPLUS*

By Eric Englund

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I

The extent and duration of the difference between prices of farm products and prices of commodities purchased by farmers are the obvious cause of the agricultural depression. Many farmers have been forced into bankruptcy, particularly those who went most heavily into debt while prices were high and whose obligations became due when farm products had lost a large part of their former purchasing power. It is only natural that such an abrupt transition from prosperity to depression should create widespread discontent among farmers and seriously affect non-agricultural industries and classes that depend in large measure upon farmers to buy their commodities and services.

It is small wonder, then, that a great many plans have been proposed to improve the economic status of agriculture, many of which have savored strongly of financial heresies that have long been familiar to students of economic history, while other proposals have set forth new or old phases of various plans of price fixing by public authority. It is indeed commendable that, notwithstanding the many economic nostrums that have been advanced, our legislative bodies have refused to be stampeded and have felt their way cautiously in the enactment of laws affecting agricultural economic problems, with the result that several beneficial laws have been placed on the statute books while others are in the process of enactment. At the same time, facilities for gathering reliable information have been greatly strengthened, thus providing stronger foundation for future policies.

While several remedies of dubious merit have been conceived, expounded, and almost forgotten, the plan to sta-

*The author is indebted to Professor B. H. Hibbard for valuable criticism on the manuscript.

bilize the price of certain farm products by government control of the exportable surplus seems to warrant some attention, not by reason of its fundamental merit, but because it is in many respects typical of more than one plan of government price fixing, and because it has gained considerable support and wide publicity.

A paper devoted to the economic fallacies of the proposed plan may seem to the trained economist like a painstaking effort to explain the obvious. But the writer justifies his effort, not on the value of this paper to the economist, but on the hope that it will be helpful to those who have not yet thought themselves through the proposal that the government should fix the price of certain farm products by controlling the exportable surplus. No effort will be made to quote literally anybody's version of the plan, but rather to state briefly the various aspects of it, to give the reader a clearer idea of what the proposal really includes, and to point out the consequences that would in all probability follow its adoption.

II. The Plan

The discrepancy between prices of farm products and of other commodities, as shown by index figures based upon pre-war prices, has made it rather obvious that the restoration of pre-war purchasing power of farm products would remedy the present agricultural depression. Hence it has been proposed that the government should guarantee to the producer "fair exchange value" of his major products. By "fair exchange value" is meant a price which would insure pre-war purchasing power in terms of commodities bought by farmers. A composite of the plans that have been proposed to affect this adjustment contains four main provisions, which together will be referred to as one plan: (1) The government would determine the price at which farm products included in the guarantee would have pre-war purchasing power. The principle involved in this calculation is very simple. Let A equal the pre-war price of a farm product, B the pre-war price of commodities bought by farmers in per cent of itself (100), C the price of commodi-

ties bought by farmers at the time when the adjustment is being made, and X the calculated or "fair" price. The value of X is found by solving the equation, A:B::X:C. (2) The government would assure this price to producers by offering to purchase at this figure all commodities within the guarantee, not taken by other buyers at the price set by the government. Buyers would be forced to pay the guaranteed price and the general price level of these commodities would be forced up to the level of the guarantee. (3) The government would sell the surplus at the best possible advantage, which means that the surplus would be "dumped" on the world market at world prices, irrespective of the relation of those prices to the price guaranteed to domestic producers. (4) A tariff would be enacted sufficiently high to prevent importation of farm products included in these provisions; otherwise the guarantee would break down under a flood of foreign products.

III. Arguments Advanced in Favor of the Plan

Many arguments have been advanced in favor of government price fixing on the ground that producers of farm products, of which a surplus is exported, do not enjoy the protection afforded other industries by the tariff, and on the ground that it would bring about greater prosperity not only for the farmer but for other people as well. It is argued that the proposed plan would provide "equality for agriculture" in the form of protection which the tariff on farm products does not give. The tariff is an aid to those who produce commodities of which the home market will take more than is produced at home or which are produced under a sufficient degree of monopoly control to make it possible and profitable to "dump" a surplus abroad at less than the price charged to domestic consumers. Since farmers do not enjoy monopoly control, prices of farm products in this country are in the main determined by what the exportable surplus can be sold for in the markets of the world, which in effect makes the farmer's market open and unprotected. Therefore, the net result of the tariff in the long run is a disadvantage to the producer of farm products of which we export a surplus, for he sells his product in the

open market of the world and buys commodities of other industries in the tariff protected domestic market.

In contending that the proposed plan would benefit other industries and non-agricultural people, the argument seems to be that the increased purchasing power of those who would be directly benefited by the guaranteed price would insure a better market for manufactured products, thus bringing about better returns on capital invested in industrial enterprise and greater continuity of employment for labor at better wages. This would in turn create a business confidence which would be a strong stabilizer of our national economic life, and would promote further economies in the use of labor and capital through greater continuity of business operations, and consequently of employment.

Dumping of surplus products on the foreign market at a lower price than the consumer at home is forced to pay, is held to be both possible and justifiable. Manfacturers of certain kinds of farm machinery, sewing machines, etc., have manufactured more of these goods than the home market would take at the price asked for them, and have found it profitable to dump the surplus on the foreign market at a lower price. Farmers and others have been obliged to pay more for these commodities than the price asked for the same wares in foreign markets. Although this has been severely condemned as a wrong, it is held that it would now be right to charge the consumer at home more for our major farm products than we ask the foreigner to pay. This contention in itself seems to be based on the ethical doctrine that two wrongs make a right.

One plan of price stabilization is entitled to special mention,* because it represents an attempt to avoid one of the principal objections to government price fixing, namely, that the government would have to bear the difference between the world market price and the stabilized domestic price on the exportable surplus. This proposal is frequently referred to as the "Moline plan." It differs from the general plan, as outlined in this paper, in that it would attempt to

* "Equality for Agriculture," by George M. Peck, President, and Hugh S. Johnson, Vice President, of the Moline Plow Company.

charge to producers the major share of the loss sustained by the government in any given year. It is claimed that this would eliminate the objection that price stabilization by the government would be a heavy burden on the public treasury. The claim would no doubt be substantiated if it were possible to distribute the deficit to the millions of producers whom the plan is supposed to benefit, in proportion to their contribution to the total of each product put on the market.

Although this species of the genus price fixing differs from other proposals in one particular, it has many features in common with the rest, one of which is that it would be a pretty good plan if it were workable. Another point of similarity is that the government would be charged with the task of executing the idea. The authors of the plan have not attempted to outline a way of putting it into effect, but have generously left it to Congress to create a "commission of experts" to work out a system for the proper execution of the principles embodied in their proposal. To this commission would be assigned the task of adapting the practice of "dumping" to American agriculture, which is vastly different from the industries that have profitably dumped their surplus products. Furthermore, agriculture does not possess the business characteristics that are necessary to successful dumping, as will presently be pointed out more fully. It appears that it would also be the task of this commission to organize the wheat growers, numbering nearly two million and a quarter, and several millions of producers of other major farm products, into a coordinate and reasonably harmonious whole. The obstacles in the way of perfecting such an organization are great, but it would be necessary to overcome them before the principles expounded in "Equality for Agriculture," could be carried out. Even if it were possible to overcome these difficulties, all objections to government price fixing, aside from those that rise out of a deficit, would apply to this proposal as much as to the general plan as outlined. These objections, including those that are based on financial grounds, will be discussed in the remainder of this paper.

IV. Shortcomings of the Arguments Advanced

Although it is admittedly true that a tariff on imports will not raise the price of those products that are produced in greater quantity year after year than is needed for home consumption, the conclusions set forth by proponents of this price fixing plan are in several respects based on unsound premises. The analogy between dumping the exportable surplus of farm products on foreign markets and so disposing of certain kinds of machinery and implements, is particularly faulty, because of fundamental differences in the conditions that predominate in agriculture and in the manufacturing of commodities that have been successfully dumped.

In this connection it might be well to cite the main conditions that are necessary to successful dumping and to consider how far they apply in agriculture. In the first place, a considerable degree of monopoly control is necessary to profitable dumping. If more than one concern is manufacturing commodities of which a portion is sold abroad at less than the price received in the home markets, it must be possible for each producer to sacrifice a share of his output to be dumped on the foreign market at one price while the remainder is sold at home at a higher price. No manufacturer will sacrifice his own interest for the benefit of others by dumping his entire output. It is quite obvious to those who are familiar with as much as the A. B. C. of agriculture that monopoly conditions are entirely absent in the production of the products commonly included in price-fixing plans. Producers are many and widely scattered and hence it would be impossible, except by a more complete and powerful organization of producers than now seems possible to prorate to all of them the amount to be dumped, or for all to bear a portion of the difference between the "home price" and the export price. More than 4,900,000 farms produced corn for grain and 2,225,000 produced wheat in the United States in 1919, and the production of other products of which a surplus is exported is also divided among millions of relatively small economic units. This, together with the fact that new farm enterprises can be

started with an amount of capital that is very small when compared with investments in manufacturing, makes farming one of the most competitive of all forms of business.

The second condition of successful dumping is that the commodity should preferably be one of which the cost of production per unit decreases with an increase in the quantity produced. This condition is not applicable to farm products since an increase in the nation's crop of any farm product as a result of an application of more land, labor and capital in its production, would now tend to increase rather than decrease the cost per unit of the additional supply.

The third condition of successful dumping has to do with the obviousness of such practice to the people as a whole. The commodity must be of such a nature that the difference between prices charged at home and abroad will not be clearly and universally recognized at home. Such recognition would create an unfavorable public opinion which the enterprises concerned could hardly withstand. Those who are directly interested, as sellers, in the price of the commodities concerned in this plan of price fixing number several millions, but they are nevertheless a minority of the total population. The majority is interested chiefly as consumers, and since these products make up a large part of their daily consumption, they would keenly resent the guaranteed price and the dumping, and would in all probability exert political pressure to discontinue the whole plan. This point will be treated more fully in the section of this paper dealing with probable political consequences of price fixing.

While the defenders of this plan have at times claimed some analogy between the dumping of farm products and the dumping of certain other goods abroad, they have implicitly admitted the absence of such analogy in the very nature of the plan itself, for it would leave the government to bear the difference between the world price and the guaranteed price on the exportable surplus. If the analogy were sound, this difference could be borne by the recipients of the benefits of higher prices of farm products. The "Moline plan," already referred to, is an attempt to meet this objection. The price of products paid to the producer could undoubtedly be raised if the government would assume the

burden, but this remedy of the agricultural depression would be worse than the present difficulty itself, for very serious consequences would in all probability follow.

A number of people entertain the hope that world prices of farm products can be materially influenced by unified control of the exportable United States surplus. The futility of this hope should become quite evident even upon a casual study of the main problems involved. These problems are: (1) The extent of the areas producing these products; (2) the highly competitive nature of world production; (3) the comparatively small per cent that United States exports of many products make of total production of all other countries, and even of total world exports; and (4) when one year's surplus is in the hands of the government, the next crop is in the process of production and a new surplus will come on the market in a few months, thus insuring defeat of the effort to "hold" for higher world prices. Table I illustrates some of these points in the case of wheat.

V. Probable Economic Consequences

(1) *A heavy burden on the public treasury.*—At any given time the general plan, if in operation, would create a deficit to be borne by the public treasury, or its provisions would be unnecessary. As soon as the world price of a product drops below the guaranteed price the government would have to pay an amount equal to the difference between the two prices on the exportable surplus. If the difference between the world price and guaranteed price should disappear, the need for the plan would cease to exist.

An effort to measure the deficit which the government would have had to bear, had the plan been in operation in any year since the drop in prices occurred, can be based on little more than mere conjecture, because the extent of the influence of several causes contributing to the deficit is not measurable in advance. Disregarding other probable causes of deficit (which will be referred to presently), it is possible, with the aid of a few assumptions, to arrive at an approximate difference between the price paid to con-

Table I.—World Production and Exports of Wheat by Months for Specified Years in Bushels and in Per Cent of Total With Per Cent That United States Exports Are of Total World Exports; and Wheat Producing Countries and Principal Countries Contributing to World Exports.

Month when new crop becomes available or when exports take place	Approximate world production, 1921			World exports by months Average over a series of years*			U. S. monthly exports in per cent of total world exports
	Principal countries contributing to world supply	Millions of Bushels	Per cent of total	Principal countries contributing to world exports	Thousands of bushels	Per cent annual total	
January	Argentina, Australia, New Zealand, Uruguay	341	9.4	United States, Argentina, Australia, Canada, Russia, Roumania, and British India.	49,000	10	23
February	Chile	25	0.7		54,410	12	21
March	Parts of Africa, British India	321	8.8		62,630	13	17
April	Algeria—Tunis, Mexico	71	1.9		58,351	11	15
May	Asiatic Turkey	10	0.3		50,627	10	19
June	Italy, Spain, and a few minor areas	352	9.7		30,085	6	27
July	U. S., France, Roumania, Jugo-Slavia, Austria, others	1,393	38.4		25,546	6	26
August	Russia, Germany, Poland, others	765	21.1		28,301	6	22
September	Canada	343	9.5		29,926	6	27
October	Finland and parts of Russia	5	0.2		36,025	7	17
November	Harvesting in minor and scattered areas	---	---		32,052	7	15
December	Harvesting begins in Argentina	---	---		33,923	6	18

*Years included in averages for different countries exporting wheat: Argentina and Australia, 1909-18; Canada, British India, and the United States, 1908-09 and 1917-18; Roumania, 1908-09 and 1915-16; Russia, 1908-09 and 1916-17.

sumers in 1921 and the calculated or "fair" price, on the net United States exports for that year of wheat, corn, rye, barley, cotton, pork and beef. The assumptions used are (1) that had the plan been in operation, it would have made no difference in the volume of net exports; (2) that prices paid for these exports by foreign buyers at our ports and carrying charges from farms to the ports, would have remained the same. The results arrived at on the basis of these assumptions, and the method of calculations, are shown in Table II, which gives a figure of $575,825,000 as the deficit which, under the proposed plan, the government would have had to bear in 1921 on the net exports of the seven farm products included in the calculations.

There are other factors that would have contributed to an increase in the deficit beyond the figure given in Table II. Additional cost to the government of operating the grain business would have to be met with public funds, unless the cost could be charged to the producers. Although wheat is a commodity for which demand is relatively inelastic, it is likely that a higher price would to some extent decrease home consumption and correspondingly increase the exportable surplus. This would result in a still greater deficit to be borne by the government. Another and even more important factor in increasing the exportable surplus, and consequently the deficit, is the increased production that would follow this artificial increase in price to producers. Further consequences of this stimulus will be discussed more fully in another part of this paper.

(2) *Higher Taxes and Their Consequences.*—The deficit that would result from the operation of this price fixing plan could be met only by one or more means of taxation within reach of the federal government. Were the necessary revenue to be raised by import duties, prices of commodities concerned would rise. Should the government resort to some form of sales tax the burden would likewise be passed on to the consumer. It is indeed unlikely that a plan could be devised for raising this additional revenue that would not tend to increase the price of commodities in general, resulting in a proportionate reduction in the pur-

Table II.—Net U. S. exports in 1921 and average farm price in 1914 and 1921 of products indicated, calculated farm price at which each product would have had pre-war (1914) purchasing power, and difference between calculated price and 1921 farm price per unit of product and on net exports.

Product	Net U. S. exports in 1921	Average farm price in 1914	Average farm price in 1921	Calculated price at which product would have had the purchasing power in 1921 that it had in 1914†	Difference between calculated price and 1921 farm price	
					Per unit of product	On net exports
	(000 omitted)	Dollars	Dollars	Dollars	Dollars	Dollars (000 omitted)
Wheat, bu.	327,918	0.884	1.127	1.555	0.428	140,359
Corn, bu.	128,891	.714	.586	1.256	.670	86,357
Rye, bu.	30,145	.728	.965	1.281	.316	9,526
Barley, bu.	25,834	.515	.489	.906	.417	10,773
Cotton, lbs.	2,857,278	.124‡	.147	.218	.071	202,867
Pork,§ cwt.	20,736	6.670	6.520	11.739	5.219	108,221
Beef,§ cwt.	2,975	6.010	4.620	10.577	5.957	17,722
Total	(a minimum deficit which the government would have had to bear in 1921 had the proposed plan of price fixing been in operation.)					575,825

*Data adapted from *The International Yearbook of Agricultural Statistics*, 1909-1921, U. S. D. A. *Yearbook*, 1921, and *Weather, Crops and Markets*, Vol. I, No. 5.

†Price of articles bought by farmers in 1921 was 176 per cent of 1914 price.

‡The average farm price of cotton in 1913 is used in these calculations, since 1914 is not a representative pre-war year in the case of this product.

§Pork and pork products converted to weight on hoof at 80 per cent dressing average, and beef and beef products at a dressing average of 50 per cent.

chasing power of farm products in terms of other commodities. This would, by the very nature of the plan, necessitate an increase in the "fair exchange value" of farm products, which would in turn create a greater deficit, requiring more revenue and higher taxes, and so on in a vicious spiral. This tendency would be greatly accelerated by a higher cost of food to the consumer that would result from this artificial increase in the price of farm products. This increase in the cost of living would give ground for higher wages and consequently greater costs and higher prices of manufactured goods.

(3) *Higher Cost of Living.*—The proposed plan would increase considerably the general cost of living, aside from the fact that an artificially increased price of food products and fibers would ultimately result in higher money wages and higher prices of manufactured goods, in terms of which the purchasing power of farm products is measured. Great difficulties stand in the way of determining, with even an approximate accuracy, the increase in the cost of living that would have resulted from the adoption of the proposed plan in 1921. Certain crops reach the consumer chiefly in the form of livestock products, as is the case with corn. Other complications would make it difficult to arrive at definite figures. It is probable that the decrease below the 1914 purchasing power in the farm price of agricultural products used in the United States in 1921 amounts to several billion dollars. Whatever the true figure might be, it is certain that an increase in farm prices due to price control would have been passed on to the consumer.

While these amounts give an idea of what would have been the cost of the proposed plan to the consumer and to the government, they also indicate that the country has enjoyed greatly deflated values of food and certain raw materials, while the farmer has struggled along with a disproportionately reduced purchasing power. If it were not for the interrelated and complex economic interest of groups in society, it would seem on the surface that the non-agricultural population has enjoyed a great advantage at the expense of the farmer. Furthermore, the people of a nation

cannot be divided into two groups, "producers" and "consumers," except for convenience in certain lines of theoretical analysis. It is beyond the scope of this paper to analyze the reasons why the advantages of non-agricultural classes during the last two years have not been as extensive as they might seem when a comparison is made of prices of farm products and prices of commodities bought by the farmer. Suffice it to say that the business of people other than farmers has also been affected by the depression.

(5) *Over-Stimulus in Certain Lines of Production.*—An over-production of the commodities affected would probably be the most serious economic consequence of the adoption of the proposed plan. In the absence of effective control of output, production would be sure to respond to the artificial stimulus of a guaranteed price. Labor and capital would be drawn from other fields and put into the enterprises enjoying the guaranteed price. Those who are now farming would expand their operations and many others would go into the business of raising those crops and livestock that are included in the guarantee. Land now devoted to lower uses to which they are normally better suited, would be brought into the higher uses of producing these commodities. In the hope of sure gain, men would make heavy investments on land which under normal conditions is sub-marginal. Land prices would soar. The whole trend would be in accordance with a general principle which must be faced in matters of artificial stimulus of any line of economic pursuit: The more far-reaching the artificial stimulus given by a national policy in any field of production, the greater will be the mal-adjustment of the factors of production within the nation.

As will be pointed out in the next section of this paper, no open policy of clear favoritism will be lasting in a democratic state. It is bound to run its course and finally be abandoned. The momentum of an artificially stimulated production would bring forth such a large quantity of products that a sharp break would be bound to occur in the unupholstered market. Those who invested heavily in the artificially stimulated lines of production, and particularly those who were lured by hope of gain to go out on land which under normal conditions was too poor or too unfavor-

ably located for higher use, would be left "high and dry" to face inevitable economic ruin. The loss of life-time savings, together with broken careers would be bound to result from such blind public policy. While the supposed and often sincere purpose of such a policy would be to remedy the post-war depression in agriculture, its real effect would be to set forces in motion in time of peace which would eventually produce another agricultural depression in the United States probably as great as the one from which we are now just beginning to emerge, a depression due to forces set in motion by a great war.

VI. Probable Political Consequences

(1) *Disfavor of People not Benefitted by Price Control.*—Many farmers who do not produce the favored commodities would in no way benefit by this plan and would have to pay higher prices for many items of food and eventually pay more for other commodities. In addition to all this, they would be obliged to bear heavier tax burdens, unless the cost of price fixing could be passed on to those whom it is intended to benefit; and this possibility, to say the least, is very remote. Consumers, other than farmers, would also have to pay higher prices and higher taxes, and would join the unfavored farmers in condemning the plan as an outright subsidy of certain groups of farmers, at their expense. A large portion of the public would keenly resent having to pay a given price for our farm products while "the foreigner" would get them for another and a lower price. The consumer at home would object to being required to pay higher taxes to enable the government to carry on price discrimination against him and in favor of the foreign consumer.

(2) *Change in Government Policy.*—It is difficult to conceive of a more prolific source of bitterness and class strife than a policy of artificial price control such as is suggested in the proposed plan. As already pointed out, no such policy of price control could be lasting in a democratic state where government is responsive to public opinion. Such a plan could not long continue in operation before a "con-

sumers' bloc" would be formed in Congress which would in time repeal the law providing for price control, and it is possible that the reaction would be so strong that laws really beneficial to the farmers would also be repealed. Such a bloc would operate in the open since its existence would depend upon the votes of a large number of consumers. It is readily conceivable that enough public disfavor would be created to remove from power any political party responsible for the enactment of such a law. In justice to our political parties, it should be remembered that no party has as yet taken a favorable stand on price fixing as a remedy for the agricultural depression.

VII

It has been the purpose of this paper to show that the proposed plan of fixing prices of farm products, instead of being helpful to the farmer, would be a boomerang to him and harmful to society as a whole. Although the suggestion stands little or no chance of being enacted into law, it has seemed desirable to point out the fallacies in the proposal, since the plan has won considerable support even among men of highest motives and recognized ability in their fields.

The support which the proposal has won seems to be due to two reasons. In the first place, those who support it seem to have overlooked the fact that the causes of the agricultural depression are deep and far-reaching and therefore cannot be remedied by a simple stroke of legislation. It is quite natural for any group that has become conscious of an economic disadvantage to appeal to the government for a speedy remedy. There is strong ground for apprehension over what appears to be a growing belief that government is all powerful in economic matters and that statute law can, by some sort of magic, supersede economic law, and thus find a short-cut to economic rehabilitation and security. Although it is undeniable that much can be done by helpful legislation, there is nevertheless genuine menace in too much faith in the power of legislation to solve economic problems.

The second reason for the amount of support which this proposal has gained is to be found in the failure of many

people to understand what Frederic Bastiat, French economist, called the difference in industrial society between that which is seen and that which is unseen. As a source of present-day economic fallacies, this failure to see more than the immediate and most obvious side of a problem is probably second in importance only to the demagogue's desire to prey upon the prejudices of people. The obvious side of the problem, to the proponents of the price-fixing plan, is that prices of farm products are low and that the adoption of their proposal would cause prices to rise. The "unseen," or the less obvious side, is that the adoption of the proposed plan would result in more taxes; higher cost of living; higher prices of commodities the farmer must buy; artificial stimulus of agricultural production; the bringing of poor land into use; class antagonism and eventual repeal of the law; and serious depression and suffering in agriculture, following the inevitable removal of the artificial stimulus of a guaranteed price. In short, the proposed remedy would be worse than the disease which it is designed to cure.

REVIEWS

THE FARMER'S BOOKSHELF

Harcourt, Brace & Company, of New York, have issued a series of books under the general title, "The Farmer's Bookshelf." The series is edited by President Kenyon L. Butterfield, President of the Massachusetts College of Agriculture. The first number in the series is, "The Agricultural Bloc," by Senator Arthur Capper; the second is, "The County Agent and the Farm Bureau," by Maurice C. Burritt, Vice Director of Extension Work, Cornell College of Agriculture; the third is, "The Farmer and His Commodity," by Dr. Dwight Sanderson, head of the Department of Rural Organization, Cornell College of Agriculture; the fourth is, "The Grange Master and the Grange Lecturer," by Jennie Buell; and the fifth is, "The Farmer and Labor Movement," by Hayes Robbins.

The authors of these books are authorities on the subjects on which they write, and the books are well worth the time of perusal by those interested in the subjects of which they treat. The press work is good and the volumes present an attractive appearance.

The Agricultural Bloc. By Senator Arthur Capper, (Harcourt, Brace & Company, New York, 1922, Pp VII, 171. $1.35.)

Senator Capper is especially qualified to deal with the Agricultural Bloc, having been a member of the organization from its inception. The Bloc was organized on May 9, 1921, in the office of The American Farm Bureau Federation at a meeting called by Senator Kenyon. Twelve senators attended this meeting, the purpose of which was to decide upon a program of legislation for the benefit of agriculture. Both the great political parties were equally represented in the organization, and representatives of the Department of Agriculture were invited to be present to discuss the needs of agriculture with the members of the organization.

At this meeting four committees were appointed to deal with legislation relating to transportation, the Federal Reserve act, commodity financing, and miscellaneous agricul-

tural bills. The Senator points out that the Bloc declared **for** things, not **against** things, and that the legislation they espoused was for the public welfare, not for the welfare of farmers as opposed to the general public.

The organization was later enlarged to a membership of twenty-two. From the first, Senator Kenyon was recognized as the leader and the meetings were usually held in his office.

A similar group was organized in the House of Representatives but has never functioned so effectively as the Senate group. "The Agricultural Bloc was the result of the conviction forced upon the more thoughtful representatives of the farmers that they must unite on a small and direct program in order to bring the nation to see the needs in an emergency and to act before it was too late."

The formation of the Bloc was accomplished at a time when agriculture was facing a serious crisis. This crisis is attributed to the reaction following the over stimulation of industry during the war. A tremendous slump in prices during the latter half of 1920 made the agricultural situation critical and it has continued more or less so since that time. The author contends that the activities of the Bloc are not concerned with class legislation, but that the organization is making an honest effort to put our basic industry on a firm foundation. He claims that "an agricultural interest can not in the end be a selfish class interest since nature allows no monopoly in agriculture." He says that if Congress had not been remiss in its duty, the organization of the Bloc would not have been necessary. "While professing great faith in the men of the land, our people have developed an apathy toward the real needs of agriculture until an impending disaster, long forecast and foretold, had to break upon our heads to awaken us."

The author claims that farmers were not fairly treated in the matter of price-fixing during the war, particularly in the case of wheat. He also points out the persecution to which the officers of some of the cooperative milk organizations were subjected. The situation made it necessary to take vigorous measures toward remedying some of the evils that existed.

At the time the Bloc was formed farmers were selling their crops at a loss; they were bearing the burden of back-breaking freight rates; they had no adequate system of credit; there was general opposition to efforts looking toward cooperative marketing; packer control of the marketing of live stock was under fire; and there were serious abuses in the methods of some of the grain exchanges.

Senator Capper stresses the point that the Bloc did not undertake to force through Congress a miscellaneous lot of legislation affecting agriculture, and that in no case did it ever try to secure the passage of a bill that was not in the public interest. Where difference of opinion existed amongst the members of the Bloc as to the merits of any particular piece of legislation, the Bloc took no action concerning such legislation.

Attention is called to the fact that since this organization began its activities more wholesome legislation in the interest of agriculture and of the public generally has been put through Congress than during any similar period in the history of the country.

The Bloc proposes to continue its activities and will limit itself to a few important measures at a time, with a view to obtaining legislation that will be of benefit not only to agriculture but to the general public. It is one of the few blocs in Congress not seeking legislation for the special benefit of some particular group.

W. J. SPILLMAN.

The Farmer and His Community. By Professor Dwight Sanderson, New York State College of Agriculture. (Harcourt, Brace and Company, New York, 1922, Pp VIII, 249. $1.35.)

Professor Sanderson says about "The Farmer and His Community:" "Its chief aim is to establish a point of view with regard to the rural community as an essential unit for rural social organization," through sociological analysis of the past and present elements of rural society.

Professor Sanderson has woven a valuable tapestry out of the current thinking of the past ten years on the country life question. This tapestry has its unity and contribution in the pattern. All the elements of country life—such as farm folk,

home, village, markets, cooperation, education, religion, health, play, government—are related to the social concept "community." This is the pattern. And this pattern is the aim in view.

The book is reasonably priced, readable, written in clear, matter of fact style. Free from exaggeration, it tells a convincing story of the power of community in rural life.

C. J. GALPIN.

The Labor Movement and the Farmer. By Hayes Robbins, (Harcourt, Brace and Company, New York, 1922, Pp VI, 195. $1.35.)

An early chapter entitled "If the Farmer Worked for Wages" raises hopes that the succeeding treatment will be more critical than it proves to be. In fact, as a whole the contribution made by this volume is not toward new light on phases of the subject but toward better general appreciation of the cause of organized labor. As an apology it is well handled. How convincing it is depends on what it is of which the reader is to be convinced.

Industrial Democracy is discussed without well-defined conclusions as to its scope and limitations. The standard of living of organized laborers is assumed to be of no offense to farmers when it is high and advancing. This is not proved. The fact that most farmers labor is no proof that higher real incomes among non-agricultural workers become transferred automatically or more easily to those who work the farms. Certainly higher nominal incomes due to higher wage scales received by non-agricultural workers may make it harder for prosperity to get passed around until after a certain amount of adversity has been passed around. The ground for rapprochement between non-farm laborers and laboring farmers is not so smooth and steady as assumed in this volume. Even in the legal rights to collective bargaining by farmers dealing in commodities and by organized laborers dealing in what is agreed to be something entirely apart from commodities it is unsafe yet to assume a full and final parallelism. This assumption is by no means disputed in this volume.

In other words the book is written in what might be termed a semi-critical vein. While uncritical in its reference to matters just mentioned, it is much more critical in its treatment of the extremes and weaknesses of the labor movement in the

United States and more particularly in other countries. Withal, however, it stimulates a sympathetic interest in the progress of a vast body of fellow citizens. That is the function of the book, and that function is served effectively.

It is no disparagement of the moving power of a book to speak of its convenient form, size and organization. A series cannot be weaker for a volume so easy to take up and so hard to lay down.

CHARLES L. STEWART.

The County Agent and the Farm Bureau. By M. C. Burritt, (Harcourt, Brace & Company, New York, 1922, Pp XVI, 269. $1.35.)

This book deals with the origin, development, financing, purpose and methods of county agent work in the United States, and of County Farm Bureaus which have been developed as coordinate agencies for the promotion and support of county agent work. The origin, functions and status of State Federations of Farm Bureaus and like information for the American Farm Bureau Federation is also given. These agents and agencies have grown up as a part of or in close support of the extension system in agriculture and home economics of the Land Grant Colleges and the U. S. Department of Agriculture.

The author of the volume, Mr. M. C. Burritt, is peculiarly well fitted from experience and contact with the work to write on the subject. He is Vice-Director of the Extension Service of the College of Agriculture of Cornell University, New York, has had a leading part in the development of county agent and Farm Bureau work in that State from the time of its origin, and has played an important part in stimulating the organization of State and National Farm Bureau Federations. He has been one of the strongest advocates in the country for fuller farmer partnership with the Agricultural Colleges and the Federal Department of Agriculture in the development of cooperative extension work, and the principles and ideals which have and, in his judgment, should prevail in this work are set forth in a most helpful way throughout the book.

In his advocacy of joint supervision of county agent work by the cooperating agencies concerned, he has undoubtedly gone farther than good administration will sanction. It is

quite possible for several cooperating agencies to agree on what they will jointly do, how, when and where they will do it, and the agent or agents they will employ to carry out the work, but after this has been agreed upon, the administration of the jointly employed agent can not long be entrusted to more than one agency without embarrassment and confusion.

The book is essentially a progress report on the county phase of the cooperative extension work of the Agricultural Colleges and the Federal Department of Agriculture, which is still in a mobile and changing state. The book will be found most helpful to all engaged in extension work and of special interest also to those farmers and students who desire a knowledge of the most significant movement for good among the rural people of the United States of the last half century.

C. B. SMITH.

The Grange Master and Lecturer. By Jennie Buell. (Harcourt, Brace and Company, New York, 1922, Pp III, 178. Price, $1.35.)

The work of the National Grange which for 56 years has been a leavening and uplifting force in agriculture has not lent itself in any large measure to printers' ink. It is a farmers' fraternity and its work is done in largest measure through those fraternal relationships created inside the closed door of a Grange hall but working and bearing fruit in every walk of life.

One of the few books dealing with this work is Miss Buell's work "The Grange Master and the Grange Lecturer." The author, as noted in a preface by President Kenyon L. Butterfield of Amherst, has served for 25 years as secretary of the Michigan State Grange and for six years as its lecturer, prior to which she was also master of a subordinate grange. She writes from a thorough experience and deep appreciation of the real work of the Grange.

The chapters on "Beginnings," "Departments of Grange Work" and "Extent of the Field" introduce those not members of the Grange to the real fraternal, social, educational and community spirit which it exemplifies. The rest of the book is a discussion of the practical problems which the Grange Master and the Grange Lecturer meet in the none too easy task of maintaining the spirit and the interest without which the work of any organization fails.

A. M. LOOMIS.

REPORT OF COMMITTEE ON RESEARCH

The Committee on Research for the year 1922 decided to make a relatively simple survey of research being conducted along farm economic lines by various state and federal agencies. A questionnaire was sent to each institution asking for a statement listing by subject the various projects to be undertaken during the current year, status of the men doing the work, approximate amount of time to be spent, and an outline of the methods to be used.

Replies were received from thirty-four state colleges and universities, from a number of state departments of agriculture or divisions of markets, and from four Canadian Provinces as well as from the U. S. Bureau of Agricultural Economics.

The state educational institutions reported a total of 144 projects whereas the U. S. Bureau of Agricultural Economics reported 71. There is probably some duplication in some instances where both states and federal government reported men employed jointly by state and federal funds without giving any information whereby these institutions could be checked against each other.

For the purpose of tabulation, the projects were grouped under a small number of headings which roughly approximate several important phases of the general subject.

Number of Projects Falling Into Various Classes. Amount of Time Devoted to Each Class, and Percentages of Totals

	Projects Reported		Time Devoted to Each Class		
Class of project	Number	Per cent of total	Number reporting time	Amount of time in months	Per cent of total time
Land and Tenancy	13	9.0	13	87.5	9.2
Farm Organization	38	26.4	36	223	23.3
Cost of Production	41	28.5	35	390	40.8
Marketing and Cooperation	31	21.5	25	192.5	20.1
Prices	6	4.2	6	21.5	2.2
Farm Finance	3	2.1	3	18	1.9
Miscellaneous	12	8.3	7	24	2.5
Totals	144	100.0	125	956.5	100.00

On the basis of the amount of time spent a different analysis was attempted in order to ascertain what classes of men are

to do the work. The results showed that the 956½ months reported were divided as follows:

Status	Months	Per cent of total
Full Professor	126½	13.2
Associate Professor	56	5.9
Assistant Professor	153½	16.0
Instructor	75	7.8
Assistant	485½	50.8
Extension Worker	60	6.3
	956½	100.0

Most of the state departments of agriculture either referred our letter to the state agricultural college or Experiment Station or replied that they were conducting no research projects. A few, notably those of Pennsylvania, Massachusetts, Wisconsin, and Missouri reported projects, most of them having to do with grades and standards.

For the Canadian Provinces six projects are along farm organization lines, one probably comes more nearly in the cost of production group, two are marketing projects, one rural credit and one miscellaneous.

The U. S. Bureau of Agricultural Economics reported 71 projects under a somewhat different group from that used above. Of these projects six fall in the land group, twelve are reported under the head of farm management, thirteen under the head of cost of production, nineteen are reported by the commodity marketing divisions, thirteen are reported by the Cost of Marketing and Market Extension Divisions (nine and four relatively) and five are on Rural Life.

Respectfully submitted, Committee on Research.

H. E. ERDMAN, Chairman.

NEWS NOTES

Mr. M. L. Mosher, who was Farm Adviser in Woodford County, Illinois, for a period of seven years, has accepted an appointment in the Department of Farm Organization and Management in the University of Illinois. Mr. Mosher is a graduate of Iowa Agricultural College and was for some time connected with that institution before taking up county agent work.

Mr. W. J. Roth recently resigned his position in the Department of Farm Organization and Management in the University of Illinois in order to take a position on a farm. Mr. Roth's object is to secure more farm practice as a supplement to his college training.

Professor A. D. McNair of Arkansas Agricultural College is this year pushing the matter of keeping Farm Accounts and Household Accounts also by the system of placing Farm Account Books and Household Account Books with farmers and their wives; in which books every alternate sheet is perforated and tears out. This alternate sheet is the carbon copy which is mailed to his office or sent in by the County Agent or Home Demonstration Agent for inspection and correction, and a corrected statement is sent back to each cooperator.

An enterprise survey of the sweet potato industry in New Jersey which will show costs, profits and practices, is being made by the New Jersey Agricultural Experiment Station in cooperation with the New Jersey State Department of Agriculture. About 300 records have been obtained and results will be printed as a joint publication.

The Department of Agricultural Economics at North Carolina State College of Agriculture is just now completing the compilation of information gathered in a Tenancy Survey of 1,000 North Carolina farms. This survey was carried on jointly by the three State educational institutions, the State Bureau of Markets and the U. S. Department of Agriculture.

A Farm Finance Survey of 800 North Carolina farms by Professor Fred R. Yoder, of North Carolina State College of

Agriculture, and Mr. H. F. Beardsley, of the United States Department of Agriculture, is now in press.

The Department of Agricultural Economics and Business Administration at North Carolina State College is this year, for the first time, offering a curriculum in Agricultural Administration and has twenty-three students enrolled for this course. The purpose of this four-year course is to train demonstration agents, persons to work for the cooperative marketing associations and other agricultural administrative positions.

Extension work in farm management on a project basis was started for the first time in New Mexico this year. Eighteen farm account schools were held, and nearly 200 farmers signed up the project to keep accounts.

L. H. Hauter of the New Mexico Extension Service is teaching a class in marketing this semester. This is the first year that marketing has been taught at the New Mexico Agricultural College.

Mr. D. H. Doane has moved the headquarters of his Consulting Service to St. Louis, Missouri. He can now be reached at 3207 Washington Avenue, St. Louis, Missouri. Mr. Doane has recently established a record in two or three ways. In the first place he is selling Farm Management successfully on a commission basis. In the second place, every member of his staff is a member of the American Farm Economic Association. This includes Mr. D. C. Wood, Mr. R. R. Hudleson and Mr. L. E. Tutt.

Sixty-six schools in North Dakota are now teaching farm accounting, following the general plan or outline formulated cooperatively between the States and the Department of Agriculture three years ago. These schools are using the textbook and guide, "Simple Farm Accounts," by Rex E. Willard, together with the farm account book for the practice work. They have recently prepared a supplement to the textbook and guide to assist the teachers in the presentation of the subject. The textbook, "Simple Farm Accounts," has met with a rather wide distribution, copies being requested from almost every State and several foreign countries, including India, Canada and New Zealand.

Dr. F. A. Pearson, formerly of the Bureau of Agricultural Economics, returned to Cornell February 1st to accept a professorship in the Department of Agricultural Economics and Farm Management.

The Department of Agricultural Economics and Farm Management, New York State College of Agriculture, announces an attractive group of graduate courses for the summer school from July 7th to August 17th, 1923. Among the courses offered will be two in Land Economics by Dr. R. T. Ely of Wisconsin, a course in Advanced Agricultural Economics by Dr. Warren, courses in Prices and Statistics by Dr. F. A. Pearson, a general lecture course on Public Problems of Agriculture with various men of national prominence participating, and a course in Farm Management by Dr. Myers. This summer session is the outgrowth of the successful summer session of 1922 and is planned to meet the needs of men working in other institutions who wish to take a short period of advanced work in the summer.

An interesting project has been started this year by the Extension Department of the Mississippi Agricultural and Mechanical College. Three communities representing as many soil types of the State were selected as centers about which Extension Specialists would devote approximately half their time if need be to increase the efficiency of the phase of farming that each specialist represents. Members of the Agricultural Economics Department of the Station were invited to attend the meeting in which this work was outlined, and were asked to serve on committees for same. A Farm Business Analysis Survey was the first step taken and as soon as the data are transferred to office sheets Mr. Paul F. Newell the Extension Chairman of the Committee will call a conference and the policies for the work will be determined.

The Division of Agricultural Economics, at Minnesota, will offer a full summer quarter of work during the summer of 1923. Both graduate and undergraduate courses will be given in "Marketing of Farm Products" and "Economics of Agricultural Production." Seminars will be conducted in both of these fields and also in "Land Economics." The seminar work in Marketing will deal especially with marketing organization. The Department of Economics will give courses in Economic

Theory, Money and Banking, Transportation, Statistics, and Accounting.

Mr. E. C. Johnson, Minnesota, '20, and Mr. C. M. Arthur, Penn State, '15, have been added to the staff of the Division of Agricultural Economics at Minnesota, taking the place of Mr. Paul L. Miller, who is now with the Bureau of Agricultural Economics, and Mr. W. H. McCord, who has gone into commercial work at Nashville, Tennessee.

The Agricultural Economics Section of the Iowa State College Extension Service is cooperating with 75 cooperative livestock shipping associations, located in 10 different counties in record and management demonstrations. Uniform records are kept and studied periodically by officers and managers of the cooperating associations.

Two elevator short courses, of two days' duration each, are being held in April by the Iowa State College Extension Service. The purpose of these short courses is to give instruction to officers and managers of farmers' elevators in grading, accounting, management and cooperative organization problems.

Two regional farm business analysis surveys are being made in Kentucky this year. One is in Mason, Fleming and Bourbon Counties and will include 125 farms. This territory is a region of rolling limestone land. Burley tobacco, corn and wheat are the principal crops. The grazing of dairy and beef cattle and sheep and the production of hogs are the leading live stock enterprises.

The second survey is in LaRue County on the southwestern edge of the Central Bluegrass Region. Seventy-five farms are included in this survey. The surveys are being made in connection with the extension work in Farm Management and the field work is in charge of Mr. C. U. Jett, extension specialist in Farm Management.

Farm Management tours proved popular in Kentucky last year and there are calls for tours in the same counties and in a number of new counties this year. The tours will be conducted in the late summer and early fall.

A farm management survey of eighty-six farms has been completed for the Lewes area in Sussex County, Delaware.

The survey was conducted by Farm Management Demonstrator M. O. Pence, cooperating with H. W. Hawthorne of the Bureau of Agricultural Economics, U. S. Department of Agriculture. The survey is being used in laying out a program of extension work in cooperation with local banks and committees of farmers grouped according to enterprises. As a result of committee meetings at which recommendations were made to the crops committee covering changes of rotation, elimination of unprofitable crops, and the introduction of improved seed stock, the County Agent has planned a series of crops demonstrations and has arranged for a farm management tour during the summer to observe the results of these demonstrations.

Tentative wool grades formulated by the Bureau of Agricultural Economics, U. S. Department of Agriculture, were unanimously approved at the final hearing held in Washington, February 6, 1923. The date of promulgation of these tentative grades as the official standards of the United States will soon be determined by the bureau and they will be established under authority contained in the Warehouse Act. Gen. John P. Wood, President of the National Association of Wool Manufacturers, was enthusiastic in his support of the grades and promised the full cooperation of his association in the use of Federal standards.

J. Clyde Marquis, Director of Information, presided at the hearing, and was assisted by C. V. Whalin, G. T. Willingmyre, W. E. Doble, D. W. Willingmyre, and W. A. Mueller. Twenty-eight persons were present, including the President and Secretary of the National Association of Wool Manufacturers, representatives of the Daily News Record, Textile World, and officials of State and Federal Departments.

With a view to correlating the recommended grades with the English count system, a careful study of the British system will be made by representatives of the Bureau.

The first farm account school which has ever been held in Nevada was put on in Pershing County with an attendance of 16 farmers and farm women. Following this first endeavor, eight other schools were held. The total attendance at all the account schools held this spring will approximate 90 or 100 farmers. A farm account club has been organized consisting

of 8 boys and girls from sixteen to twenty-one years of age. A farm account book covering accounts for farm and range work in the State is being prepared. Plans have been made for complete farm management surveys covering about 100 farms in irrigated districts of Nevada.

County Extension Agents are endeavoring in three counties in Nevada to obtain data on the cost of running cattle on the national forests and some costs on range cattle production from outside the forest reserve district.

Within the last two years, a labor income survey, covering 300 farms in South Carolina, has been made, this survey being carried on with reference to the 1921 crop year, and it was conducted by the method of personal interview entirely. Altho the data are not quite completely tabulated and ready for publication, nevertheless some conclusions can be drawn.

The principal factors affecting income were yield, size of business, and diversity, much as is found in the other farm management surveys. The ability of the farmer to diversify determines largely at present his success, since the boll weevil has made it imperative to choose some crops or industries in addition to cotton. The choice of additional cash crops then is an important part of the management. Some met this problem by growing peas which brought a very handsome price, others potatoes and syrup, others grew small grains and hay, while still others developed the livestock end, especially dairying and beef.

Mr. D. S. Bullock, who has been investigating the livestock situation in Argentina for the United States Department of Agriculture, has returned to the United States. He left the States for the Argentine in January, 1921. He made his headquarters at Buenos Aires for a year and nine months, leaving last November for Peru where he made a special study of the livestock industry of that country, traveling through all principal livestock sections. He sailed from Callao, Peru, on the Santa Elisa, March 14, arriving in New York City, March 26.

Federal grades for rye, effective July 1, 1923, have been promulgated by Acting Secretary C. W. Pugsley, under the authority of the United States grain standards act. Rye is defined as any grain which before the removal of dockage con-

sists of 50 per cent or more rye, and when free from removal of dockage contains not more than 10 per cent of cereal grain of a kind or kinds other than rye. Five grades are provided for under the regulations.

Experiments in estimating cotton acreage from airplanes are to be made in the near future. From the three planes lent by the War Department to the Bureau of Entomology for distributing calcium arsenate dust over the cotton fields of the South, photographs of selected areas will be made from which this bureau hopes to determine acreage. Flying at an elevation of 10,000 feet, these machines could cover the entire cotton belt in 1500 flying hours. The details of the experiments have not been fully worked out as yet.

Arizona farmers in common with the farmers of other parts of the United States have felt the pinch of low prices for the things they have to sell and high prices for the things they buy. Just now the agriculture of the State is undergoing a readjustment and as an aid and guide in this readjustment the Agronomy Division of the University of Arizona is publishing a brief bulletin on the subject "Suggestions for Safe Farming in Arizona."

Professor G. E. Thompson, who for the past five years has had charge of the Farm Management investigation and teaching work of the University of Arizona in addition to his regular duties as Professor of Agronomy and Agronomist of the Experiment Station, has resigned his position effective July 1 and will take over the active supervision of his holdings in southern California. Professor R. S. Hawkins, now assistant agronomist of the University of Arizona, will assume the duties and responsibilities now held by Professor Thompson.

Fifteen men, including the agronomy professor from Syracuse University and a member of the extension staff from Cornell, completed the hay inspection course given by the Federal Bureau of Economics at Auburn, N. Y., March 5-17.

Col. Flavillus Nathaniel Gray, Texas Cotton Statistician of the Bureau of Agricultural Economics, stationed at Houston, Texas, died suddenly March 25 while on his way to greet the Secretary of Agriculture, then in Houston, Texas.

After nineteen years of service in the Department of Agriculture, Nat C. Murray resigned as chairman of the Crop Reporting Board March 31, to accept the position of Statistician and Crop Reporter with Clement, Curtis & Co., grain brokers of Chicago.

A bulletin on "The Purchasing Power of Nebraska Grains" by Professor H. C. Filley and Mr. E. A. Frerichs, a graduate student of last year, in the Department of Rural Economics, is now in the hands of the printer. This study is based largely or altogether upon the grain prices paid at Columbus, Nebraska, 1877-1922, and U. S. Bureau of Labor data.

Professor A. W. Medlar has summarized the results of two 1922 crop year surveys. A survey made in the south central part of the State included 26 farms on which wheat was the main cash crop. Their average receipts were $2,278, expenses $1,262, and labor income minus $267. The ten best farms from the standpoint of labor income had $2,368 average receipts, $965 expenses, and $308 labor income. The other survey covered 79 farms in the irrigated district near Scotts Bluff in the extreme western part of Nebraska; 22 farms with investments averaging $10,235 had farm incomes of $549, and labor incomes of $48 and 32 with an average investment of $19,350 had farm incomes averaging $1,373 and labor incomes average $402 each. Eight farms with an average investment of $41,200 each had farm incomes averaging $4,318 and labor incomes of $2,258. The 79 farms averaged $1,520 in farm income and $470 in labor income.

E. L. Taylor, State Extension Agent in Farm Management, has been holding farm account schools and undertaking to secure a sufficient number of account schools for a county-wide summary to be made at the end of the year in a number of counties. Scotts Bluff County is undertaking to secure 100 sugar beet records. Equally large numbers of corn and oats enterprise records are being sought in some other counties. Much interest is shown in hog cost records.

Nebraska Agricultural Experiment Station Bulletin 185 entitled the "Nebraska Farm Family: Some Land Tenure Phases" by J. O. Rankin is ready for distribution. It is based mainly upon a socio-economic land tenure survey of 1,044 farms made in cooperation with Drs. C. J. Galpin and L. C.

Gray of the Bureau of Agricultural Economics. It is the second bulletin published on the basis of this survey. Two more have been accepted for publication and others are in preparation.

Copies of farm management records were returned to the cooperators in Randolph and Royalton, Vermont. There was much interest shown by the farmers in the results of this survey. Quite a large number of the men are keeping a record of milk receipts and grain purchased in order that this information can be secured more satisfactorily next spring.

The Department of Farm Economics of the Kentucky College of Agriculture has about completed the tabulation of the figures obtained in a farm business analysis survey carried on last summer on 115 farms in the "Purchase Region of Western Kentucky" for the year 1921. One interesting point brought out by the tabulations is that labor income decreased as the size of farms increased. Another point was that there was not the same relation of crop yields to labor income in this instance as has been shown in most surveys taken in previous years. Profits did not advance with the increase of crop index.

The labor incomes of the operators of these farms averaged—$113.00. A few of the farms showed fair labor incomes despite the general depressed condition. The 10 most profitable farms had labor incomes averaging $841.00. The figures seem to indicate that the factors chiefly responsible for the profits of the most successful farmers in this region were that they handled their labor and teams in such a way as to secure the largest number of productive work units per man and per horse; they limited their acreage of crops to the point at which they could cultivate well at a moderate cash outlay; they produced a quality of tobacco for which they obtained a considerably higher price than the average; they had proportionately a greater part of their farms in grass and kept more live stock than the average for the section. A report of the survey will appear in print sometime during the coming summer.

A course in farm management and farm accounting for the use of teachers of agriculture in Michigan high schools

has been prepared by Professor Howard M. Eliot of the Michigan Agricultural College. The course provides for the summarization of a year of complete records kept by the "route" method on a representative farm in Wayne County. The accounting part of the course is preceded by ten chapters dealing with farm management problems. Among the topics presented are chapters on farm income, comparative costs of living in country and city, seasonal labor distribution, and relative profitableness. The course is a departure in that the relative profitableness theory instead of the complete cost theory is used in the summarization of the accounts. It is being mimeographed for distribution by the Edwards Brothers of Ann Arbor. It contains about one hundred and twenty-five pages.

The Division of Farm Management of the College of Agriculture, University of California, is planning to revise its teaching material and to offer two courses with the beginning of the next academic year, one each in Farm Organization and Farm Analysis. Each one carries three units of credit. These courses replace the two former ones of (a) course in general Farm Management and (b) course in advanced Farm Management. These changes, it may be noted, are in line with the practice which is taking place in the presentation of Farm Management material in other institutions.

A new group in Rural Economics has been instituted in the College of Agriculture of the University of California to include the subjects of Farm Management, Rural Institutions, Agricultural Education, and training of specialists in Agricultural Extension. This new group provides a foundation for the training of students both in a general course along business lines as well as to fit them for one of the specialized subjects which make up the group, e. g., farm managers, agricultural teachers, and county agents. This group is the seventh provided for the College of Agriculture and is in line with the six others which cover, respectively, the fields of Agronomy, Horticulture, Animal Husbandry, Forestry, Landscape Gardening, and Agricultural Science.

A. E. de Fremery, graduate of the College of Agriculture, University of California, December, 1915, was added, July 1, 1922, to the staff of the Division of Farm Management of that institution as associate. Mr. de Fremery, during that period

between graduating and coming to the institution, has been actively engaged in the management of farm properties of from one thousand to three thousand acres in extent.

For the first time in the history of Purdue University a separate program in Farm Management was given this year at the Farmers' Short Course. Agricultural Economics is now regarded of sufficient importance to give it a prominent place on the program. Two of the principal speakers were J. Clyde Marquis of the Bureau of Agricultural Economics and Dr. B. H. Hibbard of the Agricultural Economics Department, University of Wisconsin.

An Agricultural Economic Club was recently formed at Purdue University, comprising the Farm Management staff, the Director and Assistant Directors of the Agricultural Experiment Station and the Extension Department, and a few others particularly interested in Agricultural Economics.

This organization meets regularly once a week and has subscribed for the study, "Economics for Executives" by George E. Roberts, Director of the American Chamber of Economics. The membership is limited to less than twenty members in order that all may take an active part on the program and in the discussion.

Progressive Spirit Shown in Meeting of New England State Marketing Officials and New England Research Council

The business-like and matter-of-fact way in which relatively new phases of marketing service and research work were discussed at the annual meeting of New England Marketing Officials held February 1st and 2nd, at the office of the New England Research Council on Marketing and Food Supply denotes the advancement that is taking place in this important field. A number of constructive and interesting subjects was taken up, especial attention being given to shipping point inspection, standardization and certification of fruits and vegetables and methods of conducting marketing research.

The meeting was attended by about thirty representatives of the agricultural colleges and departments of markets of

New England and of the United States Department of Agriculture.

Mr. Douglas S. Dilts explained the development of inspection work for potatoes and peaches in New Jersey which was one of the first States to undertake this service. Representatives from New England reported on progress of similar work in their States. The policy of permissive rather than compulsory inspection was endorsed and the opinion was expressed that the best road to final success in shipping point inspection lies in demonstrating its efficiency in the beginning with a few organizations in each State.

That the leaders in marketing research in New England are awake to the fundamental necessity for accurate, basic statistics was shown by their interest in the extensive crop, livestock and dairy reporting program presented by Mr. V. A. Sanders, New England Statistician of the Bureau of Agricultural Economics and by their willingness to cooperate in carrying it out. The discussion of the projects outlined by Mr. Sanders indicated that it is essential to accumulate more statistical data before research studies can be carried on with greatest efficiency.

Talks on the subject, "Basic Economic Problems Around Which the New England Research Program in Agricultural Economics Should Center," were given by Prof. A. W. Manchester, Connecticut Agricultural College; Mr. W. A. Schoenfeld, Bureau of Agricultural Economics, and Mr. E. H. Thompson, president of the Federal Land Bank of Springfield. Mr. Eldon C. Shoup, secretary of the New England Research Council, discussed briefly the methods used by that organization in promoting Marketing Research in New England.

The meeting was closed with a discussion of the subjects of extension teaching and cooperative marketing. Dr. McFall of Massachusetts Agricultural College and Mr. Eugene Merritt of the United States Department of Agriculture gave addresses on market extension and extension teaching and Dr. Alexander E. Cance discussed the topic, "Can Cooperative Marketing Raise the Price Level to the Farmer?"

MARKET STUDIES OF THE NEW ENGLAND RESEARCH COUNCIL ON MARKETING AND FOOD SUPPLY

In its capacity as the central agency for coordinating the research work of New England State Marketing and Educational organizations and the United States Bureau of Agricultural Economics the New England Research Council reports a range of very interesting projects.

The "Influence of the Push-cart Vendor on the Glutted Market and Other Retailing of Perishable Produce," is the subject of one study being conducted in Boston by the Massachusetts Division of Markets and the U. S. Bureau of Agricultural Economics. It has attracted more than usual attention partly because it is concerned with a subject to which little thought has previously been given and partly because anything which bears upon the question of waste in the distribution of foodstuffs is eagerly sought. The object of the investigation is to determine just what degree of usefulness and efficiency the Push-cart man has in the market and to suggest measures for increasing the effectiveness of this type of retail selling.

A new type of study undertaken in New England recently was the "Influence of Advertising and Other Factors on Consumer Demand for Milk." Similar investigations will be made within the next six months for raisins, cranberries and citrus fruits.

Other studies being carried on through the office of the Council include the "Costs of Marketing Potatoes," "Costs and Practices in the Marketing of Baldwin Apples," an "Analysis of New England Milk Marketing Practices" and a "Survey of Boston as a Food Distributing Center."

The majority of these studies are conducted under cooperative agreements between the U. S. Bureau of Agricultural Economics and State organizations. The Research Council acts as the coordinating link, its functions being to prevent duplication and to afford a central office for concentrating the market research activities of New England.

REPORT OF COMMITTEE ON AGRICULTURAL OUTLOOK

The committee called by Secretary Wallace to consider the agricultural outlook and to prepare a statement which will provide a basis upon which readjustment to meet the economic situation may be made by agricultural producers, reported on foreign and domestic demand and certain leading products. This report will give a basis for interpreting the report on intentions to plant issued April 20 by the United States Department of Agriculture.

Foreign Demand

The foreign outlook, on the demand side, seems slightly less favorable to our farmers in 1923 than it was in 1922.

The favorable factors with respect to foreign demand are: First, the influence of American prosperity upon the demand for European goods, and second, the possibility that the slight business recovery that has occurred in a number of European countries may gradually gain momentum. Despite the tariff European exports to the United States in recent months have been considerably larger than for the same period a year ago. American prosperity increased purchases by the United States in South America, Asia, Africa, and Australia, which enables those countries to purchase somewhat more in Europe, thus giving Europe funds with which to buy United States foodstuffs and other commodities.

The unfavorable factors are: First, the progressive piling up of Government debts on the continent of Europe, with its effect upon exchange, currency, and business; second, the Ruhr situation.

The only possibility for an important increase in purchasing power lies in the ability of Europe to expand her manufactured exports. It is of the most vital interest to American agriculture that the United States lend aid in every way possible to the settlement of the reparation and other European problems. Revival in Europe has been much more marked in agriculture than in manufacturing.

It was necessary in 1920-21 to submit to great price reductions in farm products in order to get Europe to take them.

The prospect with reference to the supply of farm products for the coming year is that there will be at least no reduction in output in the United States. With some overflow of the business activity of the United States to the rest of the world, particularly the non-European part of the world, the prospect would rather be that there will be some increase in the production of foods in foreign countries. We can not, therefore, confidently offer any reason for the expectation that our farmers will meet any less severe competition in European markets during the coming year than they have met during the past year.

Domestic Demand

The domestic demand for agricultural products will be active so long as the present prosperous condition of business with full employment continues. Beyond a period of six to nine months in the future most authorities at present hesitate to make business forecasts, but most competent observers seem to agree that we may expect general business prosperity to last at least six to nine months longer. If this opinion is correct demand will be distinctly more active next autumn than it was last autumn in so far as the demand for farm products depends upon the purchases of American families not themselves on farms.

Wheat

The American exports of wheat during the last two years were unusually large owing to the low exports from eastern Europe, and continued low production in some countries in Europe. These exports should not be taken as normal, nor be expected to continue permanently. The European countries are making efforts to put their grain production on a pre-war basis and as they become able to accomplish this it is to be expected that our exports will decline and that our production should be readjusted to meet these changing condition.

The condition of the winter wheat crop in the United States is unfavorable. The intended plantings of spring wheat are 94.5 per cent of last year's acreage and weather thus far has

been unfavorable for spring planting. The enormous net movement of 1,120,000 persons from farms to towns and cities in the two years ending with December 31, 1922, leaves the farms in an unfavorable position to meet emergencies.

The rainfall in the United States has such a dominating influence on the final production that in spite of unfavorable factors the supply may be so large as to keep prices low or if the rainfall is unfavorable it may result in such a reduced production as to make farm prices rise.

Cotton

The world's consumption of American cotton in 1921-22 was about 12,600,000 bales; the indicated world's consumption for the year 1922-23 is not less than 13,000,000 bales. There is no evidence at present that the consumption of 1923-24 will fall below this figure.

The available information indicates, however, that the world carry-over of all cottons on July 31, 1923, will be 6,800,000 bales (largely of foreign short staple cotton) compared with 6,700,000 bales in 1922 and 10,500,000 bales in 1921, and that the use of American cotton will be little, if any, restricted on account of foreign production.

On the basis of farmers' intentions to plant 12 per cent greater acreage than they planted in 1922, the cotton acreage harvested in 1923 would be 36,888,000 acres. If the yield per acre in 1923 should prove to be the same as the average for the five years 1918-22, the total crop would be 11,810,000 bales. If the yield should be the same as the lowest in the last five years (124.5 lbs.) the total crop would be 9,610,000 bales. If the yield should be the highest in the last five years (178.4 lbs.) the total crop would be 13,770,000 bales.

The indicated carry-over of lint cotton (including mill stocks) in the United States at the end of the present cotton season (July 31, 1923) will be 1,184,000 bales (including 100,000 bales imported foreign cotton), compared with a carry-over of 2,832,000 bales in 1922; 6,534,000 bales in 1921 and 4,287,000 in 1920.

Tobacco

The figures of intended planting raise serious questions. The intended planting for 1923 exceeds the acreage of 1922 by 10 per cent, the average acreage for 1918-1822 by nearly 9 per cent, and the average acreage for 1909-1913 by 55 per cent.

It is true that the general business situation warrants the expectation of an active demand from ultimate consumers for the next 9 months. This factor is favorable. But it is relatively an unimportant factor. In the main, since the cessation of extraordinary war conditions, the demand for leaf tobacco is comparatively inelastic. Conditions of production and supply in the main control. There is nothing in the probable demand sufficient to offset the contemplated increase of 10 per cent in planted acreage; particularly when we consider that the 1922 acreage was above the normal and that the trend of prices since 1920 has, on the whole, been downward.

Corn and Hogs

The corn situation at this date is about normal, stocks on farms being almost exactly the same as the 5-year pre-war average. Between now and the time the new crop is harvested there will be some tendency toward corn shortage because of the larger number of hogs on feed.

Hog production has been heavy and is still in a state of expansion. Unless bad weather and other conditions have reduced the number of spring pigs to an unusual degree, the price of hogs may be depressed next fall and winter.

During the past winter more pounds of pork products were produced than in any previous winter in history, amounting to a 30 per cent increase over the preceding year.

The storage holdings of pork and lard were on April 1, 1923, 929 million pounds as compared to 677 million pounds on April 1, 1922, an increase of 37 per cent in the year, an equivalent on a liberal estimate for carcass weights of over 1,300,000 hogs. All products except lard show a distinct increase.

The prospect which producers must face before a year has elapsed is the absorption by domestic and foreign consumers of a surplus of over six million hogs and 250 million pounds of stored products. This represents a surplus of over seven million hogs, approximately 12 per cent above last year's production.

The following economists and statisticians participated in the conference: George E. Roberts, National City Bank, New York City; Carl Snyder, Federal Reserve Bank, New York City; Wesley C. Mitchell, National Bureau of Economic Research, New York City; B. M. Anderson, Jr., Chase National Bank, New York City; E. N. Wentworth, Research Department, Armour Co., Chicago, Illinois; B. W. Snow, Bartlett-Frazier Co., Chicago, Illinois; C. Reed, Geo. H. McFadden & Bro., Philadelphia, Pa.; Warren M. Persons, Harvard University, Cambridge, Mass.; Geo. F. Warren and F. A. Pearson, Cornell University, Ithaca, New York; Thomas S. Adams, Yale University, New Haven, Conn.; H. A. Wallace, Secretary Corn Belt Meat Producers Association, Des Moines, Iowa; H. W. Moorhouse, American Farm Bureau Federation, Chicago, Illinois; H. C. Moulton, Institute of Economics, Washington, D. C.; Walter W. Stewart, Federal Reserve Board, Washington, D. C., Frank M. Surface and E. G. Montgomery, Bureau of Foreign and Domestic Commerce, Washington, D. C., Wm. T. Foster, Pollack Foundation for Economic Research, Newton, Mass.

New Members, January 1 to April 1, 1923

Andrews, M. E. Miss, Agricultural College, Agricultural College, Miss.
Bass, Fred, The Farmers State Bank, Armstrong, Illinois.
Berg, Wallace O., 908 13th St., N. Fargo, N. Dakota.
Boland, John L., Missouri Farm Bureau Federation, Webster Groves, Mo.
Calnan, T. X., Valley City, North Dakota.
Campbell, Louis A., care of State College, Bozeman, Montana.
Caverno, Xenophon, Canalon, Missouri.
Clark, Walter T., Storrs, Connecticut.
Creasy, Frank M., 2509 Dudley St., Lincoln, Nebraska.
Ebersole, J. F., Federal Reserve Bank of Minneapolis, Minneapolis, Minn.
Fetrow, Ward W., Dept. of Agri. Econ., Univ. of Wisconsin, Madison, Wis.
Frame, B. H., 209 Agricultural Building, Columbia, Missouri.
Fuller, Orville M., 1331 10th Ave., North Fargo, N. Dakota.
Graves, Henry S., School of Forestry, New Haven, Connecticut.
Gromer, Sam'l D., 209 Agricultural Building, Columbia, Missouri.
Gusler, Gilbert, Agri. News Service Inc., 31 W. Lake St., Chicago, Ill.
Hudelson, Robert, 3207 Washington Ave., St. Louis, Missouri.
Johnson, Geo. F., Huntington, Indiana.
Johnson, T. D., Purdue University, Lafayette, Indiana.
Johnson, Wm. J., 20 8th St., S. E., Washington, D. C.
King, Ben H., Colorado Agricultural College, Montrose, Colorado.
Knutson, George, State Agricultural College, Ft. Collins, Colorado.
Larsen, O. H., Copenhagen, Denmark, Europe.
Le Feber, John, 138 8th St., Milwaukee, Wisconsin.
Luckham, C. F., St. Williams, Canada.
Meyer, A. J., Extension Service, Columbia, Missouri.
Morgan, O. S., Columbia University in the City, New York, N. Y.
McCaul, Benjamin, Ayr, North Dakota.
McDaniel, Guy Q., County Agent, Court House, St. Joseph, Missouri.
McReynolds, P. O. Box 53, Jefferson City, Missouri.
Osborn, Walter, Iowa State College of Agri. and Mechanic Arts, Extension Service, Ames, Iowa.
Patch, Gifford, Jr., East Lansing, Michigan.
Price, H. Bruce, University Farm, St. Paul, Minnesota.
Reilly, E. E., Ont. Agricultural College, Guelph, Canada.
Schrider, George W., Dept. of Farm Organization and Mgt., Urbana. Illinois.
Schurz, F. D., Food Research Inst., Stanford University, California.
Sheay, John, 209 Agricultural Bldg., Columbia, Missouri.
Thompson. W. S., Miami University, Library, Oxford, Ohio.
Thorfinnson, T. S., Agricultural College, Fargo, North Dakota.
Tobin, John J., Montrose, Colorado.
Tutt, Lawrence E., 3207 Washington Ave., St. Louis, Missouri.
Waggoner, 87 1-2 Beverly Ave., Morgantown, W. Va.
Delaware College Agri. Exp. Station, University of Delaware, Newark, Delaware.
Library, Gainesville, Florida, care of University of Florida.
Library, National Bank of Commerce in New York, 31 Nassau St., N. Y.
N. Carolina College of Agri. and Engineering, W. Raleigh, North Carolina.

Japan.

The Library of Hokkaido, Imperial University, Sapporo Hokkaido,